Workplace stress in paediatric intensive care units in Saudi Arabia: A mixed-methods study

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ABSTRACT

Workplace stress, as experienced by nurses working in intensive care units, can affect health, quality and delivery of nursing care and healthcare costs. However, no studies have purely focused on Paediatric Intensive Care Units (PICU) and specifically considered workplace stress within a Saudi Arabian context. This study addressed this omission. This study explored workplace stress amongst nurses working in PICUs in Saudi Arabia. A mixed-method research was conducted in two phases. In Phase One, (n = 172) nurses from six PICUs completed a questionnaire; in Phase Two, face-to-face semi-structured interviews were conducted with 24 of the original 172 participants. The quantitative data revealed that workplace stress was associated with workload (2.29 ± 0.81), followed by death and dying (2.07 ± 0.77) alongside patients and their families (2.02 ± 0.79). Most nurses suffered from medium levels of workplace stress; this was associated with tangible personal characteristics, including nationality and academic nursing qualifications. Six key themes emerged from the qualitative results: Sources of workplace stress, consequences of workplace stress, individual characteristics that help to manage workplace stress, work characteristics that help to manage workplace stress, motivation to work in PICUs in Saudi Arabia and suggestions for workplace stress management. The Dynamic Model of Workplace Stress was developed, highlighting the interactions between the sources and consequences of workplace stress. Despite reporting a medium level of workplace stress, the nurses perceived their workplace to be a highly rewarding environment.

Key Words: Nurse, Registered nurse, Workplace stress, Paediatric Intensive Care, PICU, Critical care, Culturally competent nursing, Saudi Arabia

1. INTRODUCTION

The World Health Organization (WHO) revealed that workplace stress "is the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope" (para 1). It can occur in different circumstances and environments and may induce poor individual health and reduced organisational performance.[1]

Over the last 20 years, workplace stress in nursing has become a growing global concern.[2] Levels of it, with its consequences on nurses' health, can impact on the maintenance of high-quality nursing care and the effectiveness of healthcare systems.[3] Also, it can negatively impact on nurse retention.[3]

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The unique culture and diverse nursing workforce of Saudi Arabia (SA) are important considerations when exploring workplace stress within that country; however, there has been a limited focus on that area. Based on a systematic review of the literature, the few studies that have been conducted have employed a purely quantitative methodological approach, concentrating on nurses from different acute and critical care nursing units.[4–8] Although workplace stress in Intensive Care Units (ICUs) has been studied in SA,[4,6,8] no research has specifically focused on nurses working in Paediatric Intensive Care Units (PICUs).

International research (in countries such as Taiwan, Serbia, Egypt and Sudan) has examined PICU nurses' workplace stress[2,9,11,12] and provided an initial understanding of the potential sources of it. However, much of the research involved adult ICUs,[9,11] acute paediatric nurses[12] or neonatal ICU nurses.[10]

Understanding workplace stress within the SA context was limited, and the PICU setting had not been independently investigated; this study sought to address that omission.

1.1 Aim of the study

To use a mixed-method approach to explore and understand workplace stress and its sources amongst nurses working in public hospital PICUs in Riyadh and Dammam City, SA.

1.2 Research questions

- Do participants working in paediatric intensive care units in public hospitals run by the government healthcare sector in Saudi Arabia healthcare system in Riyadh and Dammam city, experience workplace stress?
- What is the perceived prevalence of workplace stress among the participants in their work setting?
- If the participants experience workplace stress, what do they perceive to be the sources of it?
- What are the participants' perceptions of the impact of workplace stress on the quality of nursing care and their work performance in their daily nursing practice?
- Is there a relationship between the participants' personal characteristics and their perceptions of workplace stress?

2. METHOD

2.1 Research design

A mixed-method design was used as neither a quantitative nor a qualitative method could sufficiently meet this study's aim and research questions. This combination of methods leads to a more in-depth understanding of a given phenomenon.[13] The mixed-method approach aimed to achieve 'complementarity', 'triangulation', 'development', 'initiation' and 'expansion',[14] thus strengthening the research.

The study process was organised sequentially in two phases: P1 and P2. Quantitative data was collected through a questionnaire and analysed (P1), followed by face-to-face, semi-structured interviews (P2).

2.2 Reference group and pilot work

Before applying for ethical approval and collecting the data, a reference group of expert nurses (n = 5) of different nationalities and backgrounds working in PICUs in SA was consulted. They were asked to review the P1 and P2 participant information sheet, P1 questionnaire and the P2 interview schedule. These nurses used their expertise to assess the cultural sensitivity for both SA and expatriate nurses, the appropriateness and relevance of the questionnaires, the interview schedule and the clarity of the professional terminology.

After this review, and to determine the appropriateness of the research design, a pilot study was conducted. For P1, 50 SA and expatriate nurses working in a PICU were contacted and received the participant package. For P2, two nurses (SA national and an expatriate) were interviewed using a digital recorder. Pilot study participants were excluded from the main research; all suggested amendments were made before seeking and obtaining ethical approval from the Health, Science, Engineering and Technology Ethics Committee with a Delegated Authority of the University of Hertfordshire and the SA Ministry of Health (MoH) Institutional Review Board.

2.3 P1 recruitment

Participants were selected through a purposive non-probability sampling technique from those who met the inclusion criteria: SA or expatriate registered nurses who provided clinical care to children aged 0-14 years in one of the selected PICUs, completed their hospital orientation, held an active registered licence from the Saudi Commission for Health Specialities as a nurse in a PICU, and spoke and read English.

Nurses were recruited from all six PICUs in public hospitals run by the government healthcare sector in the two largest cities of the major regions of SA: Riyadh (Riyadh region) and Dammam (Eastern region). These cities have the greatest number of PICUs and critically ill children. They also employ the highest number of nurses. The PICUs had similar bed capacities, multicultural and multilingual nurses and cared for children with a range of complex health conditions.

For P1, the sample size was determined using an analysis tool (G*Power, Version 3.1.9.2 beta; Universität Düsseldorf). A total sample size of 139 nurses was required to produce data with adequate statistical power (0.95), a medium-size effect (f2: 0.15)[15] and to enhance the generalisability of the

study's results.[16] However, in case there was a low completion rate, about the required sample size, a total of 260 nurses were given the questionnaire.

2.4 P1 data collection

The questionnaire comprised two parts; initially, the participants were asked about their background characteristics, with the main body of the questionnaire comprising the expanded nursing stress scale (ENSS).[17] The ENSS is a standardised tool that measures workplace stress amongst nurses. It has previously been successfully applied to international nursing studies in acute and critical units, including SA.[5, 7] The questionnaire asked participants if they were willing to participate in P2 and, if so, to provide their personal contact information.

Introductory meetings were undertaken with potential participants at their respective PICUs; participant packages (including an invitation, participant information sheet and questionnaire) were distributed to those who met the inclusion criteria. The participants were given a month to fill in the questionnaire, completion serving as implied consent. Two weeks after each introductory recruitment meeting, a reminder in the form of an A4 poster was placed on each PICU bulletin board. Participants placed their completed questionnaire in an envelope and returned it to a locked drop-off box in the PICU. These were collected, and a general note of appreciation was pinned to the PICU noticeboard.

The 172 questionnaires were collected between April 2017 and June 2017. Before analysis, each participant was assigned a unique code.

2.5 P1 analysis

Descriptive, bivariate and multiple regression analyses of the quantitative data were performed using the Statistical Package for Social Science version 25. Values of $p < .05$ were considered statistically significant. A multinomial logistic regression analysis was performed to explore the relationship between workplace stress levels (low, medium and high) and demographics profile characteristics, including gender, academic nursing qualification, and nationality (SA, Filipino or Indian) and employment background characteristics. If a given predictive variable showed an odds ratio (OR) > 1, the odds of occurrence of the comparison group (e.g. medium level of workplace stress) increases when compared to the odds of occurrence of the reference group (e.g. low level of workplace stress) when that particular predictive variable increases.

2.6 P2 recruitment

All the P1 respondents were invited to participate in P2. Seventy-two of the 172 nurses expressed willingness. Thus, interview participants were purposively selected from the 72 based on their response to the P1 questionnaire to reflect the categories corresponding to academic nursing qualifications, years of PICU work experience in SA and levels of workplace stress. The total level of workplace stress was measured using a data-driven rank classification. Hence, there were three categories (see Table 1).

Table 1. Number of participants per category in Phase 2

Years of PICU work experience in SA	Academic nursing qualification	Level of workplace stress		
		Low	Medium	High
0–10 years	Diploma in Nursing	Three participants	Three participants	Two participants
	Bachelor of Science in Nursing	Three participants	Three participants	Three participants
11–30 years	Diploma in Nursing	Two participants	Three participants	One participant
	Bachelor of Science in Nursing	-	-	One participant

The participants in P2 included male (n = 1) and SA nurses (n = 2); although this number was small, this reflected the SA healthcare system. The remaining participants were female (n = 23). Expatriate nurses included 14 Indians, six Filipinos, one Jordanian and one Malaysian. Participants continued to be interviewed until theoretical saturation was reached.[18] Saturation occurred after 24 interviews had been conducted.

2.7 P2 data collection

Relevant written information was personally distributed to the interested potential participants; these nurses were asked to return a decision form, in a sealed envelope, via the drop-off box, approximately 1-week later, providing their personal details, a suitable interview time and a signed consent form. The interview schedule was developed and edited based on the reference group's feedback and the pilot study. Semi-structured audio-recorded interviews, lasting 35-50 minutes, were conducted in English at the participant's place of work in a private office. P2 participants received a thank-you letter and a five-pound coffee gift card (personally funded by the primary researcher). P2 data collection was completed

between November 2017 and January 2018.

2.8 P2 analysis

The data was analysed using a constant comparative method[18] and NVivo 11. This procedure was iterative and dynamic and involved making frequent comparisons both within and between each transcript, a process that was constantly repeated as new data was collected.[18] The first step involved reading the interview transcripts and applying detailed codes to segments of the text. Certain codes started to be used more than once, which provided an early indication of potential themes. The coding was then reviewed, with codes being selected, simplified, and clustered.

The codes were applied to the re-reading of the transcripts with the process gradually becoming increasingly interpretive and analytic as the codes became more abstract, inclusive and reduced in number. Similar codes merged into categories, and sub-themes were formulated. Memos and diagrams were also drawn to explore ideas and relationships between the emerging themes.

Comparisons were made both within each transcript (for example, to see whether a given participant's conceptualisations of workplace stress was consistent) and across all transcripts.[18] Therefore, this process involved a mixture of within- and cross-case comparisons,[18] thus facilitating the emergence of the six final themes.

3. RESULTS

3.1 P1 Quantitative results

A high response rate (66.1%) was obtained, with 172 of the 260 questionnaires being returned. Most participants (n = 165, 95.9%) were female. There were fewer SA participants (n = 26, 15.1%) than expatriate participants (n = 146, 84.9%), most of which were Indian (n = 76, 44.2%) and Filipino (n = 58, 33.7%). 57.6% of the participants (n = 99) held a

Bachelor of Science in Nursing, and 42.4% (n = 73) held a diploma (see Table 2).

The mean years of working in a PICU in SA were 7.64 ± 4.17 and 6.86 ± 4.98, respectively. The former group had 5.06 ± 3.33 years of experience in a PICU outside SA (see Table 3).

Table 2. Participants' demographic characteristics

Variable	Definition	n	%
Gender	Male	7	4.1
	Female	165	95.9
Nationality	SA	26	15.1
	Expatriates	146	84.9
	Indian	76	44.2
	Filipino	58	33.7
	Malaysian	1	0.6
	Egyptian	2	1.2
	Jordanian	7	4.1
	Pakistani	2	1.2
Academic nursing qualification	Diploma in Nursing	73	42.4
	Bachelor of Science in Nursing	99	57.6
Total participants		172	100

Table 4 highlights that means ± SD for stress were associated with 'workload' (2.29 ± 0.81), followed by 'death and dying' of patients (2.07 ± 0.77), 'patients and their families' (2.02 ± 0.79), 'inadequate emotional preparation' (2.01 ± 0.82) and 'problems relating to supervisors' (1.99 ± 1.01). The total means ± SD of the ENSS was 1.96 ± 0.72, indicating that the participants working in the PICUs in public hospitals in SA perceived that their situations were 'never stressful' to 'occasionally stressful'. The direct score means ± SD of the ENSS was 111.84 ± 41.06; thus, participants perceived their work in PICU in public hospitals in SA as having 'a medium level of workplace stress'.

Table 3. Participants' Paediatric Intensive Care Unit work experience

Years of PICU work experience	Country	n	%	Mean (yrs.)	SD
Participants with no previous PICU work experience in a country other than SA	Inside SA	91	52.9	6.86	4.98
	Outside SA	--	--	--	--
Participants with previous PICU work experience in a country other than SA	Inside SA	81	47.1	7.64	4.17
	Outside SA	81	47.1	5.06	3.33
Total years of PICU work experience	Inside SA and previously outside SA	172	100	9.68	5.90

Table 5 presents the demographic characteristics that were significantly related to the level of workplace stress when controlling for all confounding variables (demographic profile and employment background characteristics). Indian

(OR = 4.033, $p < .05$) and Filipino (OR = 6.545, $p < .05$) participants and participants holding a Diploma in nursing (OR = 2.969, $p < .05$) reported a medium level of workplace stress, while Filipino participants reported high levels of

workplace stress compared to Indian and SA participants. In general, Filipino participants had medium to high levels of workplace stress (see Table 5). Participants' gender and years of PICU work experiences did not predict their level of workplace stress.

3.2 P2 Qualitative results

3.2.1 *Theme one: Sources of workplace stress*

Workload was the most commonly mentioned source of workplace stress (n = 21). The nurses believed that caring for critically ill children in PICU involved numerous nursing and non-nursing tasks, which had a substantive impact. Participant [Pa] 22 compared the wide and unrealistic scope of nurses' responsibilities to being "an octopus who has to do everything". Seventeen participants mentioned the stress of caring for critically ill children. Pa 15, Pa 20 and Pa 24 emphasised that the child's critical condition was one

characteristic of the PICU that made it stressful:

"Any patient can arrest, so you always have to be prepared. This means stress" (Pa 15).

Table 4. Expanded Nursing Stress Scale scores of the participants

Subscale Variable	n	Mean	SD
Death and dying	172	2.07	0.77
Conflict with physicians	172	1.92	0.87
Inadequate emotional preparation	172	2.01	0.82
Problems relating to peers	172	1.69	0.81
Problems relating to supervisors	172	1.99	1.01
Workload	172	2.29	0.81
Uncertainty concerning treatment	172	1.94	0.90
Patients and their families	172	2.02	0.79
Discrimination	172	1.15	0.99
Total scale	172	1.96	0.72

Table 5. Multinomial logistic regression for levels of workplace stress

Levels of Workplace Stress[†]		B	Wald	Sig.	Exp(B)	95% CI
Medium	Intercept	-1.220	0.726	.394		
	Academic nursing qualification = Diploma in Nursing	1.088	4058.000	.044*	2.969	1.030-8.558
	Academic nursing qualification = BSN	0[‡]				
	Nationality = Indian	1.394	4.152	.042*	4.033	1.055-15.419
	Nationality = Filipino	1.879	6.459	.011*	6.545	1.537-27.872
	Nationality = SA	0[‡]				
	PICU work experience (outside SA) = None	-0.268	0.045	.831	0.765	0.065-8.995
	PICU work experience (outside SA) = 1-10 yrs.	-1.459	1.462	.227	0.232	0.022-2.475
	PICU work Experience (outside SA) = 11-20 yrs.	0[‡]				
High	Intercept	-0.047	0.001	.974		
	Academic nursing qualification = Diploma in Nursing	-0.117	0.053	.819	0.890	0.327-2.418
	Academic nursing qualification = BSN	0[‡]				
	Nationality = Indian	0.829	1.526	.217	2.291	0.615-8.535
	Nationality = Filipino	1.353	4.328	.037*	3.868	1.082-13.831
	Nationality = SA	0[‡]				
	PICU work experience (outside SA) = None	-0.512	0.151	.698	0.599	0.045-7.961
	PICU work experience (outside SA) = 1-10 yrs.	-1.600	1.574	.210	0.202	0.017-2.459
	PICU work experience (outside SA) = 11-20 yrs.	0[‡]				

Note. Goodness-of-fit measures: -2, log-likelihood = 87.887, p = .014; Pearson chi-squared = 23.324, p = .717. [†] The category of reference is 'low'; [‡] corresponds to the category of reference for each variable. * $p < .05$

Stress was exacerbated when a critically ill child died, especially if the nurse was a parent themselves.

"We can see what they are dealing with; it is very stressful" (Pa 21).

Twelve participants (all expatriates) felt that nursing had a low status in SA and that this influenced the physicians' attitudes, patients' parents and their families. Some nurses perceived the parents' behaviours as disruptive and related to religious or cultural factors. For example, Pa 2 reported that

the patients' parents praying for the whole night near their child made it difficult for her, as she did not have enough space to deliver care to the child. Pa 3 and Pa 6 mentioned that parents, specifically mothers, are "continuously disturbing us for simple things, and they are complaining" (Pa 3), such as "if the rhythm changes a little or the alarm activates" (Pa 6). Pa 3, Pa 7, Pa 9, Pa 13 and Pa 20 also recalled being treated disrespectfully by parents; this caused them to "feel stressed" (Pa 20). Participants raised concerns that some physicians gave them orders in a demanding manner as if

they were superior to the nurses: "Do it now, do it now" (Pa 6).

Ten participants reported issues with their managers and nurse supervisors, feeling unsupported in that they were constantly asked to help out in other paediatric nursing areas. They also thought that their efforts went unnoticed:

"Sometimes you feel more stress because your hard work is not appreciated" (Pa 11).

Finally, for this theme, some nurses of different nationalities reported that being a member of a minority group caused additional stress. Pa 10 felt particularly isolated during a night shift, as opposed to nurses who shared a national background and spent their breaks together and supported each other.

3.2.2 Theme two: Consequences of workplace stress
Consequences of workplace stress were found to relate to the participants' psychological, behavioural and physiological health. In addition, they both positively and negatively affected the overall quality of nursing care. Psychological health consequences were mentioned by 21 participants. Nurses reported being unable to disconnect from work, resulting in an inability to relax after coming home:

"We cannot even rest at home; even while sleeping, I am thinking about this patient, this situation, whether something is pending or not" (Pa 19).

Other participants rang the PICU to make sure everything was in order and/or double-check with their nursing colleagues whether any of their nursing tasks had been missed or forgotten.

Participants raised concerns about feeling tired because of workload and associated stress affecting their psychological health, commenting about being "very tired and very exhausted" (Pa 9). This could result in an inability to concentrate and feeling irritable and angry. Four participants referred to the consequences of workplace stress on their behavioural health. In some instances, this resulted in distancing themselves from other nursing colleagues and parents to focus on delivering nursing care to the critically ill child:

"Sometimes, the patient is very, very sick. At those times, I feel stressed. I do not want to talk to anybody because I am focused on so many things" (Pa 7).

Participants sometimes found themselves acting similarly with their own families, including their partner and children. For example, Pa 2 specifically mentioned that she was unable "to support them if they have any homework. I will be away from everything. I will just be quiet at home". This type of behaviour could result in overall social withdrawal, affecting their relationships with their friends and families.

Twelve participants referred to the negative consequences of workplace stress on the quality of nursing care: "As it is easy to make a mistake" (Pa 8) that could potentially lead to medication errors. Pa 8 was the only nurse to recognise that there were also some positive outcomes, arguing that workplace stress challenged the improvement of the delivery of high-quality nursing care to the critically ill child:

"Stress helps us provide a good outcome. It challenges me to do more. Any unit with stress will do a good job and will provide high-quality care to patients. This is how stress affects me".

Participants described the physical exhaustion caused by stress in the PICU, mentioning "nervous colon and an ulcer" (Pa 16) or "headaches" (Pa 21).

3.2.3 Theme three: Individual characteristics that help to manage workplace stress
Sixteen participants considered their previous and current work experience in a PICU as a key factor in their individual responses to managing workplace stress:

"I have more experience in dealing with patients, and I have handled most of the cases before. In addition, I have more experience in communicating with my superiors and with people of different nationalities" (Pa 8).

Nurses mentioned that their knowledge and skills had been strengthened by previous work in other critical care nursing units:

"That experience minimises the stress – experience is the best teacher" (Pa 24).

"NICU was my grounding experience. It is like a bridge that taught me how to deal with kids, with babies, and then again broadened my opportunities when I went to the PICU, extending my skills and knowledge" (Pa 5).

Pa 13, who had previously worked in an acute paediatric nursing unit, believed that this helped manage stress in the PICU because she was skilled in caring for this age group.

Participants who held either a Diploma in Nursing or Bachelor of Science in Nursing believed that the knowledge and practice that they received in their undergraduate programme prepared them for working in PICU. That experience enabled them to be more confident and comfortable when caring for critically ill children and helped them to manage stress.

Thirteen participants reported that religion and beliefs were individual characteristics that helped them to manage stress in the PICU. Participants had different religions but said that their faith in God helped them when caring for critically ill patients and the death of a child:

"Sometimes, patients come in a difficult condition. We do as much as we can. We give them good care, but the rest depends on God" (Pa 15).

In addition, some also believed that it was "a blessing that God ends that life" (Pa 16) that eased the child's suffering, especially when no progress could be expected. Those participants also explained that praying to God strengthened them and helped them manage this workplace stress source.

3.2.4 *Theme four: Work characteristics that help to manage workplace stress*

The most important characteristic was an inter-professional collaborative working environment (discussed by 20 participants). Nurses believed that if the PICU work environment was supportive, the levels of workplace stress would be lower for the whole multidisciplinary team.

Participants commented that although there were exceptions, most physicians and nurse managers were supportive and encouraged teamwork. Pa 2 explained:

"If I am not feeling able to handle this patient today because I am stressed, I can say that honestly to the charge nurse, and she can change the assignments, no problem".

Moreover, nurses' teamwork and mutual support for each other helped to compensate for the shortage of nurses in the PICU:

"Here, we are always working together. We have good teamwork; we help each other when we are busy, and if you have stable patients, you forget about your break, and you go to help. If an admission is critical [ill child], we all work together. One does the patient assessment, I do the documentation, and one prepares the file. We manage everything to get our work done" (Pa 15).

Most participants emphasised that the good relationships formed by working with same-gender nurses contributed to a collaborative working environment, as they could talk and express their feelings freely.

Eighteen participants referred to continuing education programmes for nurses as a means of managing stress. The nurses described different lectures encompassing various topics, including diseases, fluid and electrolyte balance, anatomy and physiology, drug calculations, mechanical ventilator care, and conducting clinical assessments. Pa 7 referred to this as a "memory stick". The lectures helped them gain new and/or update their existing knowledge of caring for critically ill children; this "reduced stress. . . because we have the knowledge" (Pa 23).

The majority of participants felt respected by the families of the critically ill children. Participants discussed that parents'

general attitude, manner of communication or simple facial expressions helped the participants to feel "value" (Pa 7), "less stressed" (Pa 11) and "happy to work here" (Pa 14). For Pa 5, "a simple thank you from the parents" made her feel like "I have the best job in the world" and "all stress goes away".

Whilst some nurses had reported that a few physicians and nursing superiors were disrespectful (Theme one), most felt valued; a consultant physician recognised the nurses' hard work and guided junior physicians, saying, "why did you not ask the nurse?" (Pa 13). This approach was appreciated:

"The physicians respect me very much. . . .When you are valued, it reduces the stress level" (Pa 16).

Nursing orientation programmes were mentioned in this theme. The benefits included lectures and a tour of the hospital, laboratories and other facilities:

"It helped me because this is a new hospital, a new environment. So, they told us about the hospital's policies and what you are expected to do. They gave us a tour of the hospital and introduced us to our new colleagues. To some extent, this taught us how to adapt" (Pa 5).

Although participants already had knowledge and experience, new nursing employees were accompanied by a preceptor for some time while they learned about the PICU setting. This familiarisation process helped manage stress and enabled them to feel ready to deliver nursing care comfortably and independently.

Cultural awareness was mentioned by nine participants, all expatriates, who perceived that it was a contributing factor towards managing stress in the PICU. Some public hospitals had recently included training in the nursing orientation programme on SA culture, the Islamic religion and basic Arabic language that could be used when communicating with critically ill children and their parents/families. This contributed to minimising the associated workplace stress. Three expatriate participants specifically emphasised the benefits of the SA awareness training. They explained that they learned "what is acceptable and what is not, especially with the patients" (Pa 5) and "how to deal with people; there are some restrictions here because of Islam and your SA culture" (ibid).

3.2.5 *Theme five: Motivation to work in PICU in SA*

Twenty participants felt that job satisfaction motivated them to continue working in the PICU. They appreciated the opportunity to closely monitor and deliver nursing care to critically ill children. Nurses said that seeing children recover was very rewarding:

"a child who was in a coma, and suddenly, after a few months of care, he is walking – this is the positive side. You see the quality of care you gave to the patient... You think they will go to school someday; they will grow up and may become a doctor or nurse" (Pa 9).

For Pa 5, an event that stood out was when a child returned to the PICU to visit her. She commented, "that made my world", and noted that it motivated her to continue working in the PICU and helped her to forget "all the stress" (ibid). Participants said that being nurses in the PICU was their choice and interested them: "I am really happy to work here with paediatrics" (Pa 24). They noted their interest in and enjoyment of working with children. In addition, three expatriate participants mentioned that they were satisfied with the salary, which helped them to raise their children back home and give them a good education. This was a priority, and, as a result, it motivated them to continue working in the PICU.

Participants also felt the excellent learning opportunities in PICU:

"You are learning continuously — how to handle different cases and patients, how to handle your stress, your emotions, everything. The learning process motivates me to continue" (Pa 17).

The many nursing procedures conducted daily, such as intravenous line insertion or venepuncture, provided learning opportunities and helped participants improve their nursing skills. Two nurses explained that this enabled them to pursue their professional goals, such as being able to work in Western countries or pursue their postgraduate education.

3.2.6 *Theme six: Suggestions for workplace stress management*

The participants suggested several ways to minimise workplace stress in the PICU. For example, it was felt that the human resource managers played an important role in facilitating the reporting and addressing of concerns about nurses' workloads. According to 14 participants, this could be achieved by increasing the PICU workforce, including nurses and physicians.

Participants suggested other ways for improvements to the hospital management that would minimise workplace stress and increase the quality of nursing care for critically ill children in the PICU. With no acknowledgement of the financial implications of their suggestions, participants stated that hospital management should increase the PICU bed capacity and prioritise the acquisition of more medical equipment and supplies. Pa 13, Pa 15, Pa 16 and Pa 21 believed that this would help to "improve [nursing] quality" (Pa 15). Pa 22 explained that an occupational health clinic for employees

would help them feel respected and valued and minimise stress, as "there is no special line for the staff" (Pa 22).

In addition, participants' suggestions to the nursing management included building interpersonal relationships with nurses, listening to their problems, improving the scheduling of duty rostering and providing further training opportunities. Pa 11, Pa 16 and Pa 24 believed that nurses' managers' good attitude will help "to create a good atmosphere at work" (Pa 11).

4. DISCUSSION

The research's findings led to the development of the Dynamic Model of Workplace Stress (see Figure 1) that reflects how participants managed their stress in PICU (using different mechanisms) and the important role of communication (at both micro and macro levels).

To date, most available workplace stress theories have been Western-based and reflect the culture of Western healthcare environments;[19, 20] therefore, their application to the Arab healthcare system is not always wholly appropriate. Previous work has not specifically focused on a PICU environment, and it has given the impression of a static position regarding the sources and consequences of workplace stress.[21, 22] However, the model that emerged from this study (see Figure 1) depicted the dynamic interplay between workplace stress sources and their consequences.

The following section of this paper will discuss the different aspects of the model within the context of the research findings and the existing literature.

4.1 Dynamic interplay between sources of workplace stress

In this study, workload influenced nurses' relationships with nursing management and nursing colleagues and, unsurprisingly, the task of 'caring for critically ill children'. Although various relationships between the different sources of workplace stress were found, the cultural challenges were the only source expressed by the expatriate participants that seemed to, either directly or indirectly, influence all other sources of workplace stress. In previous literature, the influence of culture on nurses' workplace stress in the SA context has only been discussed on one occasion. Focusing on nurses in an oncology unit, Wazqar[22] found a discrepancy between the cultural beliefs of nurses and patients' families about caring for sick patients, which, in turn, affected the quality of nursing care provided, as families refused nurses' medical advice and instructions. Patients' families followed their 'culture and traditional way' of treatment in some situations, such as herbal medicine. So, caring for the patients and families

was challenging. However, the specific relationship between sources of workplace stress and the influence of culture has not been previously explored. This study provided new in-sights by highlighting the influence of the local culture on its sources.
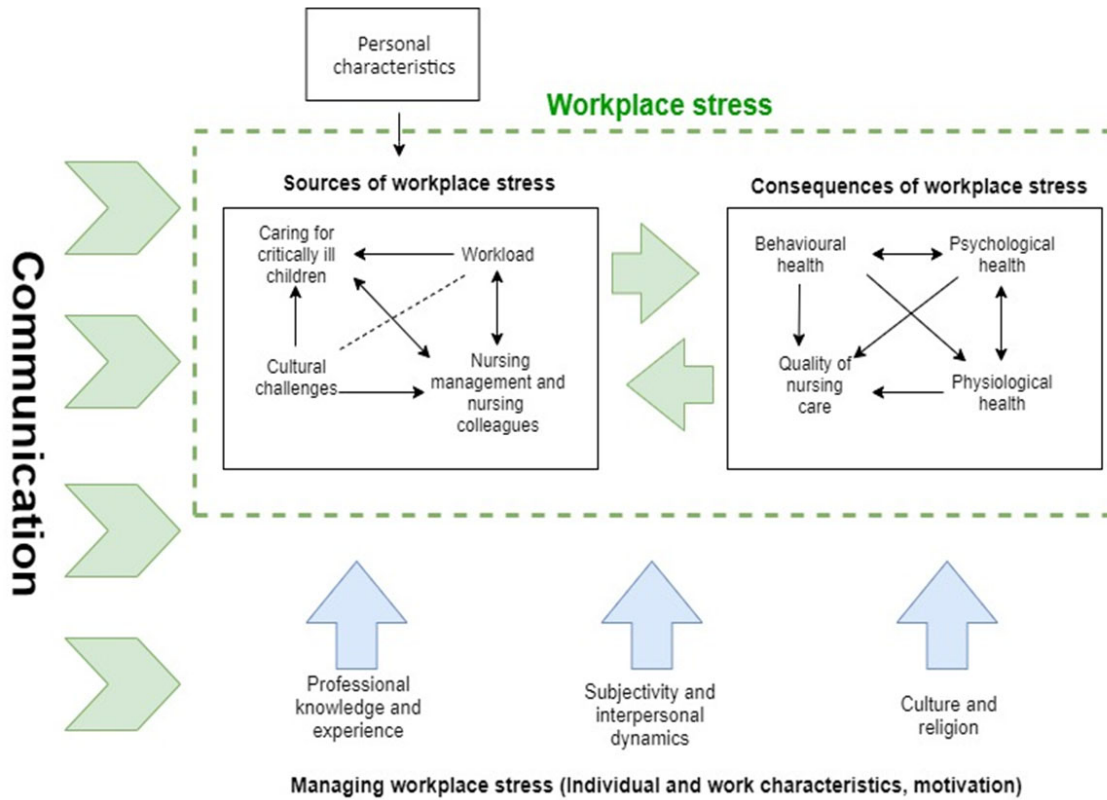
Please note that (——) indicates a direct influence, and (----) indicates an indirect influence.

Figure 1. Dynamic model of workplace stress

Caring for critically ill children was linked to these cultural challenges, as it can be strongly influenced by the cultural clash between the nurses and the parents/families, resulting in a discrepancy between both groups' expectations of each other.[23] This may include practices such as having a family member praying in the patient's room or frequent and long-lasting visits.[24] Some expatriate participants in this study believed these practices were disruptive and disrespectful. In SA culture, however, these are considered common place.[24]

In previous SA studies, expatriate nurses also faced challenges due to a lack of familiarity with local religious habits, beliefs and culture,[23, 25] thus highlighting the need to appropriately prepare nurses for the cultural context in which they are working. Another barrier to the local culture is language, which was also found to affect the participants' experiences. Knowing the culture and being trained to speak more Arabic would have helped the expatriate participants find common ground with the families. The orientation programmes en-abled some of them to learn the culture and "adjust" better (Pa 11).

Wazqar[22] identified the lack of respect for nurses by patients and their families as a major source of workplace stress for SA and expatriate nurses (which was echoed in this research by a few participants). Also, negative behaviour from physicians has been previously reported, which seems to reflect the perceptions of (mostly female) nurses working in the cultural context of SA.[23, 26] These attitudes were evident in this current study, with a few participants raising concerns.

Some participants reported a sense of isolation and inability to find common ground with their colleagues; these nurses raised concerns that they were being alienated by other personnel who shared national, cultural and linguistic backgrounds, which parallels the findings of previous studies.[23, 26]

Interestingly, culture indirectly influenced another source of

workplace stress, namely 'workload', which has been widely documented in other studies.[6, 21, 22] In this research, workload included numerous nursing and non-nursing tasks; many of the latter (such as checking equipment functions) were part of the nurses' role in SA but were not always perceived to be by the expatriate participants. Also, the participants' perceptions of the amount of work could have stemmed from comparisons with their own country and the workload at the hospitals where they had previously worked. The setting of this research was PICUs in public hospitals in the government sector (the largest part of SA's healthcare system), so this context may have seen a particularly heavy workload.[27]

As reported in other studies, the participants perceived that the high workload was due to a shortage of nurses.[25, 28] The shortage of nurses in different units in SA, including PICUs, has resulted from the inability to attract high school students (from the local population) to nursing programmes and the high turnover rates among nurses in the SA healthcare system.[25] There are multiple reasons for the latter: nurses change jobs or leave the profession, or they face challenges, including cultural ones, that indirectly influence their decision to leave nursing. It has been documented that SA family members discourage female relatives from pursuing nursing careers because of its negative public image.[25, 28] Furthermore, qualified SA nurses can be pressured by their families to move from clinical to non-clinical roles, such as those in healthcare administration,[26, 28] as this is perceived to be more prestigious. Therefore, culture also directly influences the retention of nurses in the SA healthcare system, thus indirectly influencing the 'workload' that participants frequently raised concerns about.

4.1.1 *Prevalence of workplace stress*

The quantitative P1 results showed that the PICU nurses suffered from 'medium levels of workplace stress'. The P2 results provided an insight into why the participants' individual and work characteristics enabled them to manage their workplace stress and remain motivated to work in the PICU.

The level of workplace stress in this study is similar to what is experienced by nurses in other SA nursing units[4, 5, 7, 8] and nurses in PICUs in other countries such as Sudan[11] and Bangalore.[29] However, the levels of workplace stress vary across previous SA research. There is evidence of high levels among nurses in certain units, including ICUs,[6, 21, 22] but none of these studies is specifically related to a SA PICU context. While another reported low levels of workplace stress,[30] this may be attributed to the nurses' work environment as a haemolysis unit[30] has relatively stable patients and no night shifts for nurses.

4.2 Dynamic interplay between the consequences of workplace stress

The results revealed that the consequences of workplace stress were interrelated, and all had the potential to affect the quality of nursing care. Nurses' poor physiological health affects psychological health and vice versa, which supports previous literature.[31] Similarly, the negative consequences that affected physiological health (pain and aches) could be attributed to more than merely the heavy workload.

4.3 Dynamic interplay between the sources and consequences of workplace stress

The dynamic interplay between the sources and consequences of workplace stress is based on two factors. The first is that all consequences of workplace stress can also be considered as its sources. Any of the negative effects of psychological, behavioural or physiological health can themselves be a source of workplace stress and its consequences.

The second factor is that, in addition to being the sources of workplace stress, consequences influence individual sources of it. 'Nursing management and nursing colleagues', for example, were believed by participants to result in workplace stress and ultimately lead to psychological and behavioural health issues. The consequences of workplace stress also influence one another, which potentially negatively impacts nurses' health and the quality of care.

4.4 Managing workplace stress

Managing workplace stress influenced nurses' decisions to remain in PICU, especially the expatriate Filipino participants who reported higher stress levels. According to Masselink and Daniel,[32] Filipino nurses, who comprise most expatriate nurses in SA, send their salaries to their home country. The pay level was a key aspect of their job satisfaction, as Masselink and Daniel mentioned.[32] The Filipino participants in this research stated that (aside from the job satisfaction gained from teamwork) their salary motivated them to continue working in PICU. According to Phillipson and Smith,[33] financial commitments to children may increase the likelihood of individuals remaining in their work, as was the case in this research although the nurses felt stressed.

It is interesting to note that there are no part-time or agency/bank nursing jobs in the SA healthcare system. Nurses have a contract to work in one clinical area. In practice, this means that the relatively small number of full-time nurses work together for prolonged periods (often many years), which may benefit their sense of connection with one another, especially in a close nursing unit such as a PICU. This corroborates the findings of international and national literature, highlighting that a supportive work environment

is known to lessen workplace stress and contribute to the provision of high-quality nursing care.[3]

It is not surprising to see that participants attributed importance to culture and religion when managing workplace stress. This referred to personal faith, which helped them face the challenges of their work; this is in line with Alharbi and Alshehry's[4] study of nurses in different ICUs in SA, which found that strong religious beliefs are the most common way of coping with sources of workplace stress.

This aspect of the Dynamic Model of Workplace Stress emphasises the need for familiarity with the local cultural and religious habits and beliefs, thus helping minimise the workplace stress related to the clash between the participants' and local people's cultures and faiths.

4.4.1 *Poor communication at the micro and macro levels*
Workplace stress sources, its consequences and, particularly, the individual and work characteristics and the participants' motivation to work in PICUs in SA, are linked to various communication forms or a lack thereof at both the micro and macro levels (terms that have been developed from this research). At the micro level, communication occurs personally, such as between nurses and patients' parents/families, nursing management and nursing colleagues. At the macro level, communication occurs more strategically; for example, between the whole hospital or MoH in official instructions or policies or any other formal instruction that aims to prepare nurses for their work in PICU.

Improving this micro- and macro-level communication may help to address and minimise workplace stress and its consequences.

4.4.2 *Improving micro-level communication to address workplace stress*
The most common issue reported by the participants was their poor relationships with physicians – previous studies including ICU have demonstrated how important nurse–physician communication is.[34–36] Apart from the negative consequences of such poor relationships on nurses' general psychological wellbeing,[36] which may ultimately result in them leaving their job,[36] the quality of nurse-physician communication has been shown to affect the quality of patient care and their satisfaction.[35] Studies have reported that between 37%[34] and 91%[37] of all medical errors are due to poor nurse–physician communication.

A possible way of improving this micro-level communication between healthcare professionals is to develop a more effective and personal dialogue. This could include workshops, team briefings and training that contribute to greater transparency and clarity about one another's responsibilities

and expectations and the challenges they face. Meurling et al.[38] found that team training resulted in increased teamwork climate, trust and respect towards each other.

Finally, participants were concerned that they were not helped to cope with their workplace stress or were receiving relevant support. Social support may come from families, co-workers, colleagues, managers and supervisors[39, 40] and is believed to be effective in preventing, recognising and/or addressing the sources of workplace stress.[39] The different types and positive influence of social support could be introduced at the institutional level,[40] for example, via employee training and workshops.

4.4.3 *Improving macro-level communication to address workplace stress*
Enhancement of macro-level communication refers to providing nurses with more opportunities for professional development and raising their cultural-religion awareness.

A key form of macro-level communication is raising the participants' cultural awareness through formal training. Most of the expatriate participants in this study were not familiar with the local religious and cultural beliefs in SA, and this impacted on their ability to effectively communicate with patients' parents, families and colleagues. This can exacerbate stress and impact the quality of care.[23] None of the participants commented on communicating with child patients; this may be because most of the children in the PICUs were endotracheally intubated and sedated.

Cultural awareness in the current context was crucial; before entering their new job in an international setting, the cross-culture context is the first step that needs to be undertaken by an expatriate.[41] The results from this study and previous work suggest that the lack of familiarity with the SA culture is one of the main sources of workplace stress for expatriate nurses.[22]

The language barrier can impact the quality of nursing care in SA. Al-Harasis[42] reported that 90% of nurses and 89.5% of patients suggested that nurses needed to attend Arabic courses during their orientation period. In addition, similar high percentages of nurses (85%) and patients (83.1%) advocated the presence of a translator in SA nursing units.[42]

Rather than constituting a small part of the nurses' orientation programme, perhaps the cultural awareness instruction needs to be a more extensive, structured programme that would enable nurses to be fully familiar with the local culture. However, it is acknowledged that this would have financial implications. Al-Yateem et al. (p209),[43] when discussing the components of such a programme, explained that it should include the "basic Islamic principles (5 daily

prayers, Ramadan fasting, Zamzam water)", "kinship and social factors (family structure, gender-related issues and social support system)", and "basic Arabic language skills".

Cultural awareness could be a part of continuous professional development courses.[41] Attending such training positively influences cultural competency.[23] Importantly, this type of programme could be provided to all nurses (expatriate and SA) to foster an atmosphere of mutual respect. Finally, a generic approach to cultural awareness could be embedded into university programmes to enable student nurses to develop a culturally sensitive and competent approach to care.[43]

4.5 Limitation
The position of an 'insider' in the community of PICU nurses due to professional background was reflected. Although this 'insider' status was an advantage regarding hospital access, understanding of the PICU environment and associated terminology that fostered a good rapport with participants, there were also challenges. For example, the nurses may have mistrusted the research, as "their individuality [was] stripped away".[44] Measures were taken before each interview to reduce the risk of this happening, including explaining and discussing the study's aim.

As a result of the primary researcher and participants' shared background, potential assumptions regarding the similarity of some of their shared experiences could have led to researcher bias.[45] However, all efforts were made to minimise this by using member checking, prolonged involvement, peer debriefing, triangulation, engaging in reflexivity and documenting a clear audit trail.

Response bias may have been introduced into the P1 self-reported data.[16] However, to help mitigate this, participants were provided with a good timeframe to complete the questionnaire within their own choice of venue. In addition, contact details were provided so that queries could be addressed, and anonymity was assured.

5. CONCLUSIONS
This study was the first to examine workplace stress among PICU nurses in SA and the relationship between the sources of stress and the quality of nursing care. The results of this research led to the development of the Dynamic Model of Workplace Stress, a framework that depicts a dynamic process rather than a static relationship (as has been suggested in previous work). This study provided new knowledge and empirical evidence regarding the sources and consequences of workplace stress; not only do these sources of workplace stress have consequences, but the consequences are also sources themselves. The study highlighted that cultural factors can, directly and indirectly, influence stress.

The research found that nurses suffer from a medium level of workplace stress in the PICUs of public hospitals in Riyadh and Dammam cities, SA. This result parallels the findings from other international work. However, in stressful situations, nurses in PICU (both SA and expatriate) practice effective strategies that are characterised by spontaneous, creative behaviour that helps them to cope very well and remain working in PICUs, sometimes for many years. Importantly, nurses perceived the PICU environment as the most rewarding place to work.

Relevance to clinical practise
This research has study contributed to the existing studies on workplace stress and provided invaluable insights to enhance nursing care for children and their families. The study prompted several recommendations for improving the nurses' working environments in complex, specialist-nursing units in the unique socio-cultural context of SA that align with the SA government's Vision 2030 project. These recommendations include raising healthcare professionals' cultural awareness, providing insight into coping strategies and promoting respect for the nursing profession in SA. The Dynamic Model of Workplace Stress is offered as a framework that has the potential to inform future studies. The model's applicability to other contexts has not been tested, but it could be used to facilitate the examination of workplace stress in other settings, particularly critical care environments or countries with similar multicultural, nationality and language challenges.

CONFLICTS OF INTEREST DISCLOSURE
The authors declare that there is no conflict of interest.

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